

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process chamber cleaning method for cleaning a process chamber contaminated with metal in a substrate processing apparatus for performing a vacuum process on a substrate, the method comprising:

exhausting the process chamber while after the process, supplying a cleaning gas consisting of O₂ gas and H₂ gas and an inactive gas[[,]] or consisting of O₂ gas and H₂ gas[[,]] into the process chamber with a ratio of the H₂ gas relative to the O₂ gas set at 2 or more without setting the process chamber opened to the atmosphere, and generating plasma of the cleaning gas, thereby performing cleaning inside to clean the process chamber, without setting the process chamber opened to the atmosphere after the process.

Claim 2 (Currently Amended): The process chamber cleaning method according to claim 1, wherein the metal is tungsten and process on the substrate is an oxidation process on a substrate containing ~~metal~~ tungsten.

Claims 3-4 (Canceled).

Claim 5 (Currently Amended): The process chamber cleaning method according to claim [[4]] 1, wherein the process on the substrate is a plasma process, on the substrate and the plasma process and the cleaning are performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots or ~~plasma generated by an inductive coupling type.~~

Claims 6-9 (Canceled).

Claim 10 (Currently Amended): The process chamber cleaning method according to claim 1, wherein the cleaning gas has ~~is performed by plasma having~~ a ratio of H₂ gas relative to O₂ gas set at 4 or more.

Claim 11 (Original): The process chamber cleaning method according to claim 1, wherein the process chamber is heated by plasma prior to the cleaning.

Claim 12 (Canceled).

Claim 13 (Currently Amended): A process chamber cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma oxidation process on a substrate having a laminated film including a tungsten-containing film and a poly-silicon film to selectively oxidize the poly-silicon film ~~a metal-containing film~~, the method comprising:

exhausting the process chamber while after the process, supplying a cleaning gas consisting of O₂ gas and H₂ gas and an inactive gas[[,]] or consisting of O₂ gas and H₂ gas[[,]] into the process chamber with a ratio of the H₂ gas relative to the O₂ gas set at 2 or more ~~without setting the process chamber opened to the atmosphere~~, and generating plasma of the cleaning gas, thereby performing cleaning inside to clean the process chamber, without setting the process chamber opened to the atmosphere after the process.

Claims 14-15 (Canceled).

Claim 16 (Currently Amended): The process chamber cleaning method according to claim 13, wherein the plasma process ~~and on the substrate~~ and the cleaning are performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots ~~or plasma generated by an inductive coupling type.~~

Claims 17-20 (Canceled).

Claim 21 (Currently Amended): The process chamber cleaning method according to claim 13, wherein the cleaning gas has ~~is performed by plasma having~~ a ratio of H₂ gas relative to O₂ gas set at 4 or more.

Claim 22 (Canceled).

Claim 23 (Original): The process chamber cleaning method according to claim 13, wherein the cleaning is performed while temperature inside the process chamber is set to be about 400 to 800°C.

Claim 24 (Original): The process chamber cleaning method according to claim 13, wherein the cleaning is performed while pressure inside the process chamber is set to be less than 126 Pa.

Claims 25-28 (Canceled).

Claim 29 (Currently Amended): A substrate processing method comprising:

performing a plasma oxidation process on a first substrate having a first laminated film including a first tungsten-containing film and a first poly-silicon film to selectively oxidize the first poly-silicon film inside a process chamber in a substrate processing apparatus;

exhausting the process chamber without the first substrate placed therein while supplying a cleaning gas consisting of ~~cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film,~~ wherein the cleaning comprises, after the process, supplying O₂ gas and H₂ gas and an inactive gas[[,]] or consisting of O₂ gas and H₂ gas[[,]] into the process chamber with a ratio of the H₂ gas relative to the O₂ gas set at 2 or more without setting the process chamber opened to the atmosphere, and generating plasma of the cleaning gas, thereby performing cleaning inside to clean the process chamber, without setting the process chamber opened to the atmosphere after the plasma oxidation process; and

performing a plasma oxidation process on a second substrate having a second laminated film including a second tungsten-containing film and a second poly-silicon film to selectively oxidize the second poly-silicon film inside the process chamber within the process chamber after the cleaning.

Claims 30-40 (Canceled).

Claim 41 (Currently Amended): The substrate processing process chamber cleaning method according to claim [[38]] 29, wherein the plasma oxidation process and the cleaning [[is]] are performed by plasma generated by an inductive coupling type, plasma generated by

a parallel-plate type, plasma generated by a planar antenna type, reflection wave plasma, or magnetron plasma.

Claim 42 (Currently Amended): The substrate processing process-chamber cleaning method according to claim ~~[[38]]~~ 29, wherein the plasma oxidation process and the cleaning ~~[[is]]~~ are performed by plasma generated by microwaves supplied into the process chamber through a planar antenna having a plurality of slots.

Claims 43-47 (Canceled).

Claim 48 (Currently Amended): A cleaning method for cleaning a process chamber in a substrate processing apparatus for performing a plasma process on a substrate having a metal-containing film, the method comprising:

performing a plasma oxidation process on a first substrate having a first laminated film including a first tungsten-containing film and a first poly-silicon film to selectively oxidize the first poly-silicon film inside a process chamber in a substrate processing apparatus;

exhausting the process chamber without the first substrate placed therein while supplying a cleaning gas consisting of after the process, supplying O₂ gas or consisting of alone, or O₂ gas and an inactive gas[[,]] into the process chamber without setting the process chamber opened to the atmosphere, and generating plasma of the cleaning gas, thereby performing cleaning inside to clean the process chamber, without setting the process chamber opened to the atmosphere after the plasma oxidation process; and

performing a plasma oxidation process on a second substrate having a second laminated film including a second tungsten-containing film and a second poly-silicon film to selectively oxidize the second poly-silicon film inside the process chamber.

Claims 49-54 (Canceled).

Claim 55 (Currently Amended): The substrate processing process-chamber cleaning method according to claim ~~[[53]]~~ 29, wherein the cleaning gas has ~~is performed by plasma~~ having a ratio of H₂ gas relative to O₂ gas set at 4 or more.

Claim 56 (Currently Amended): The substrate processing process-chamber cleaning method according to claim 29, further comprising seasoning the process chamber under the same conditions as cleaning, prior to the plasma process.